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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/782,835	02/14/2001	Dirk Quintens	27500/016	1614

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EXAMINER

DICUS, TAMRA

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 05/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/782,835

Applicant(s)

QUINTENS ET AL.

Examiner

Tamra L. Dicus

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

The abandonment and request for continuing examination is acknowledged.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 09-3028433 to Mochizuki et al. (*as translated*)

Mochizuki discloses an ink-jet recording sheet (element) comprising a support, an ink absorption layer (receiving layer), a porous inorganic pigment of non-crystalline (amorphous) silica, with silica or silicate particles dispersed in a cation-modified polyvinyl alcohol that inherently produce silicon/silanol/silane modified polyvinyl alcohol, which is made by copolymerizing vinyl acetate monomer and silicone containing compound (inclusive of silane), and a styrene-butadiene copolymer or acrylate latex (film-forming polymer) having a glass temperature lower than 50 degrees Celsius (see [0019-0022], pages 10 and 11, [0049], [0051]-[0053]). It is reasonable to a skilled polymer chemist that PVA, which contains large number or medium number of hydroxy groups, when mixed with silicon oxides or other silicon containing compounds, such as silane, would yield a final product (a modified PVA) which contains the similar structural makeup found in a combination of a copolymer of PVA and silane, found in claimed subject matter represented by (b). The combination found in (b) is the starting material for producing a silicon/silanol/silicone modified PVA, and is as Applicant states, "the

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equivalent term". See [0039] that teaches various silica type fine particles are known to the industry and can be used. [0041] teaches silica particles having particle size diameter of 7-80 nm, and denatured with a cation.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 4-5, and 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,238,784 to Mochizuki et al. in view of USPN 5,853,540 to Niemoller et al. and further in view of USPN 6,022,440 to Nordeen et al.

Mochizuki discloses an ink-jet recording sheet (element) comprising a support, an ink absorption layer (receiving layer), a porous inorganic pigment of non-crystalline (amorphous) silica, with silica or silicate particles dispersed in a cation-modified polyvinyl alcohol that inherently produce silicon/silanol/silane modified polyvinyl alcohol, which is made by copolymerizing vinyl acetate monomer and silicone containing compound (inclusive of silane), and a styrene-butadiene copolymer or acrylate latex (film-forming polymer) having a glass temperature lower than 50 degrees Celsius (see col. 2, line 45-col. 3, line 3; col. 3, line 24-38; col. 4, line 64-col. 5, line 5; col. 5, lines 22-25; col. 6, lines 30-35). It is reasonable to a skilled polymer chemist that PVA, which contains large number or medium number of hydroxy groups, when mixed with silicon oxides or other silicon containing compounds, such as silane, would yield a final product (a modified PVA) which contains the similar structural makeup found in a

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combination of a copolymer of PVA and silane, found in claimed subject matter represented by (b). The combination found in (b) is the starting material for producing a silicon/silanol/silicone modified PVA, and is as Applicant states, "the equivalent term".

As discussed above, Mochizuki discloses an ink-jet recording sheet (element) comprising a support, an ink absorption layer (receiving layer), a porous inorganic pigment of non-crystalline (amorphous) silica, with silica or silicate particles dispersed in a cation-modified polyvinyl alcohol that inherently produce silanol modified polyvinyl alcohol at col. 5, lines 22-25. Mochizuki also shows a styrene-butadiene copolymer or acrylate latex (film-forming polymer) having a glass temperature lower than 50 degrees Celsius (see col. 2, line 45-col. 3, line 3; col. 3, line 24-38; col. 4, line 64-col. 5, line 5; col. 6, lines 30, 34, 35; patented claim 3).

Regarding claim 4, Mochizuki does not expressively disclose amorphous silica having the particle size requirements. Niemoller teaches a water-resistant recording material for an inkjet process where porous silica has the particle size range requirements of claim 4 (see col. 3, line 19). It would have been obvious to one of ordinary skill in the art to modify the ink jet sheet of Mochizuki in order to produce an ink jet recording element like that of claim 4, for the purpose of providing good absorptivity as taught by Niemoller at col. 3, line 15 for porous pigments, like amorphous silica.

Mochizuki does not expressly disclose the modification degree range of silanol modified polyvinyl alcohol and the viscosity requirements of the aqueous solution of claim 5. Mochizuki teaches at col. 5, lines 15-25, a modified polyvinyl alcohol containing silica particles having a modification degree between 0.1 to 10 mol percent. Since Mochizuki produces the same silanol modified polyvinyl alcohol at col. 5, lines 22-25, it is obvious that the modification degree of

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modified polyvinyl alcohol would be expected to exhibit a silanol modification degree between 0.1 to 10 percent.

Regarding claims 9 and 10, Mochizuki is silent to further comprising a cationic binder (inclusive of "mordant") like that of claim 10. Niemoller teaches the cationic mordant of claim 10 (see col. 3, line 25). It would have been obvious to one of ordinary skill in the art to add further cationic substance because Niemoller teaches the advantage of fixing the ink dyes (e.g. porous silica) present in the recording layer when a cationic substance is included at col. 3, line 25 in order to produce a printed image that is water-resistant, including resistance to other characteristics such as flexing, pleating, folding, scratching, due to the cationic and ionic interaction at col. 4, lines 25-33 resulting in an image that has unlimited stability under extreme environmental conditions.

Both Mochizuki and Niemoller references are analogous art because they are in the same field of endeavor, namely ink jet recording sheet/elements.

5. With regard to claims 11-13, and 15, Mochizuki is further silent to an ink jet recording element having an adhesive polymer disposed between a support and ink receiving layer. Nordeen teaches an ink jet image composite and the method of making such, including an adhesive polymer disposed between a support and ink receptive (receiving) layer, where the adhesive may be a releasable thermoplastic layer of suitable adhesive polymers such as copolymer styrene-butadiene, acrylics, vinyl acetates (vinyl acetates includes vinyl esters), and their combinations at col. 2, lines 33-40 and col. 6, lines 41-55. With regards to claims 12-14, Mochizuki teaches several examples of acrylate latex polymers at col. 6, lines 30-44 including the copolymers of claims 12 and 14, and the polyacrylate latex of claim 13. It is well known in

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the art that the copolymers and polymers claimed are adhesive polymers as taught by Nordeen at col. 6, lines 46-55. It would have been obvious to one with ordinary skill in the art to modify the ink jet sheet of Mochizuki to include adhesive polymers and copolymers of acrylate latex such as a copolymer of ethylacrylate-hydroxyethylmethacrylate, and styrene-butadiene as taught by Nordeen in order to produce an ink jet recording element which provides additional assistance for release of the ink receiving layer from the support and provide added protection for a transferred image composite at col. 6, lines 41-46.

6. Claims 1 and 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,238,784 to Mochizuki et al. in view of USPN 6,214,458 to Kobayashi et al.

As discussed above, Mochizuki expressly discloses the claimed invention. Mochizuki does not expressly disclose an opaque support. Kobayashi teaches an ink jet recording sheet comprising the option of using a high glossy opaque support of polyethylene terephthalate in the Comparison Examples 1 and 2 in order to improve image quality. It would be obvious to a person with ordinary skill in the art to modify the ink jet sheet of Mochizuki to include an opaque support as taught by Kobayashi to produce an ink jet recording element in order to provide further support and improve image quality.

Response to Arguments

Applicant's arguments filed 4-2-03 have been fully considered but they are not persuasive.

Applicants contentions are all directed to the allegation that silanol modified PVA and/or the equivalent, the reactants vinyl acetate and silane, is not produced and therefore cannot be relied upon solely or in combination. PVA as used in (b) of claim 1, does not exclude the

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cationic groups of prior art. Again, it is reasonable to a skilled polymer chemist that PVA which contains larger number or medium number of hydroxy groups when mixed with silicon oxides or other silicon containing compounds (inclusive of silane), would yield a final product (a modified PVA) which contains the similar structural makeup found in silanol modified PVA found in claimed subject matter represented by (b). The combination found in (b) is the starting material for producing a silicon/silanol/silicone modified PVA, and is as Applicant states "the equivalent term". See example 1, column 9 where the coating solution is disclosed. The coating solution combines silica and copolymer PVA (the very same reactants as Applicant claims) among other ingredients which results in a silanol modified PVA. Also see col. 9, line 27 where the reference discloses that each additive was added in the form of an emulsion where the additive is EMULSIFIED in the PVA. This can only result in silanol modified PVA, made from the very same reactants. Moreover, because it appears from the specification on page 7, the (b) part of claims can be obtained from PVA plus unsaturated silicon compound (USC) or from copolymerization of VA and USC, the prior art of record suggest the formation of similar silanol modified copolymer PVA. A cationic mordant, dye fixing agent/binder is taught by Niemoller. See col. 3, line 25. The reference of Mochizuki and Nordeen uses a silicon material(s) in preparation of ink systems, e.g. see column 6, lines 5, 42 of Mochizuki and col. 4, lines 52 of Nordeen.

In response to Applicants argument that specific particle sizes do not mitigate the deficiencies of Mochizuki since the deficiencies lack teaching silanol modified PVA. Again, as stated above Mochizuki most definitely teaches silanol modified PVA. Consequently, since he does teach silanol modified PVA, the rejection applying Mochizuki and Niemoller is maintained.

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In response to Applicants assertion that the modification degree of silanol modified PVA can not be obvious since silanol modified PVA is not taught. Once again, as stated above, silanol modified PVA is taught, and would certainly carry the expectation that the degree is the same since the same reactants and amounts are used. Therefore this argument is moot.

Applicant further urges although Niemoller teaches requiring the additional substance of claim 10, Niemoller fails to mitigate the deficiencies of Mochizuki and is therefore inconsequential. This position simply holds no weight, because both references teach the use of PVA and Niemoller specifically teaches adding the substance of claim 10 to PVA.

Applicant concludes that Nordeen teaches specific adhesive polymers which are not disclosed in Mochizuki. The Mochizuki reference does not have to include any components of Nordeen since the rejection is Mochizuki **in view of** Nordeen. Applicant further contends that Mochizuki lacks teaching silanol modified PVA. This teaching is clearly taught and has thoroughly been explained. In response to Applicants argument that there is no suggestion to combine the references, the Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Nordeen is used to show an adhesive polymer disposed between a support and ink receptive (receiving) layer. Ultimately, the Office has shown Mochizuki does in fact teach obtaining silanol modified PVA made from the copolymer PVA and *any* silicon-containing compound.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tamra L. Dicus whose telephone number is (703) 305-3809. The examiner can normally be reached on Monday-Friday, 7:00-4:30 p.m., alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on (703) 308-0449. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-8329 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Tamra L. Dicus
Examiner
Art Unit 1774

April 22, 2003

CYNTHIA H. KELLY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

